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14. Supplementary Notes

15. Abstract

Purpose and Need

North Dakota winters, due to high winds and open prairies, have a potential for drifting snow on our roadways. Proper road design can be effective in preventing snowdrifts and poor visibility. However, there are isolated areas along our highway system that have a tendency to accumulate snow and exhibit poor driving conditions. Many of these areas are due to grade separations at intersections and structures.

During the 1996/97 winter season, the interstate system was forced to close on many more occasions due to blowing snow and snow accumulation than in past winters. After the snowstorms ceased, the interstate system remained closed while maintenance crews worked to open the roadways. The closures could be minimized if proper management and control of blowing snow could be attained. Snow management may be attained in these highly vulnerable areas through carefully designed living and structural snow fences. Addressing these problem areas is critical to ensure our roadways stay safe for the traveling public.

Objective

This research project will construct structural snow fences and evaluate the effectiveness of the structural snow fences and an existing living snow fence in the collection and control of drifting snow.

Scope

North Dakota Department of Transportation (NDDOT) has installed demonstration structural snow fence systems at four sites located on the interstate system. These four sites were problem areas due to poor visibility and snow accumulation on the roadway. One of the sites has an existing living snow fence, consisting of a young shelterbelt of Ash and Pine trees. The structural sites and the living snow fence will be evaluated to determine if snow fence systems can be utilized on a larger scale on North Dakota roadways.

Two test sites are located in the Fargo District and two test sites are located in the Bismarck District. The sites are strategically located in the vicinity of either a grade separation or an interchange along Interstates I-29 and I-94.

Summary

Installation of the snow fence systems went well. The structural snow fences are in good condition but do require maintenance to keep the polymer straps tensioned and to reattach the loose brackets. The living snow fence is thriving and has grown significantly.

The snow fences have shown the capability to collect snow in drifts. But there has not been enough snow to evaluate if the snow fences have an effect on roadway conditions.

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